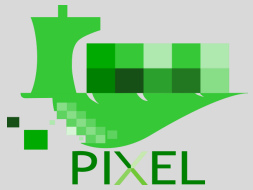
UNIVERSITAT POLITÈCNICA DE VALÈNCIA



# IoT for logistics: an application for ports

Athens 6th November 2018

ALICE CID Event on One Belt One Road initiative

Ignacio Lacalle (UPV)

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# UPV Introduction

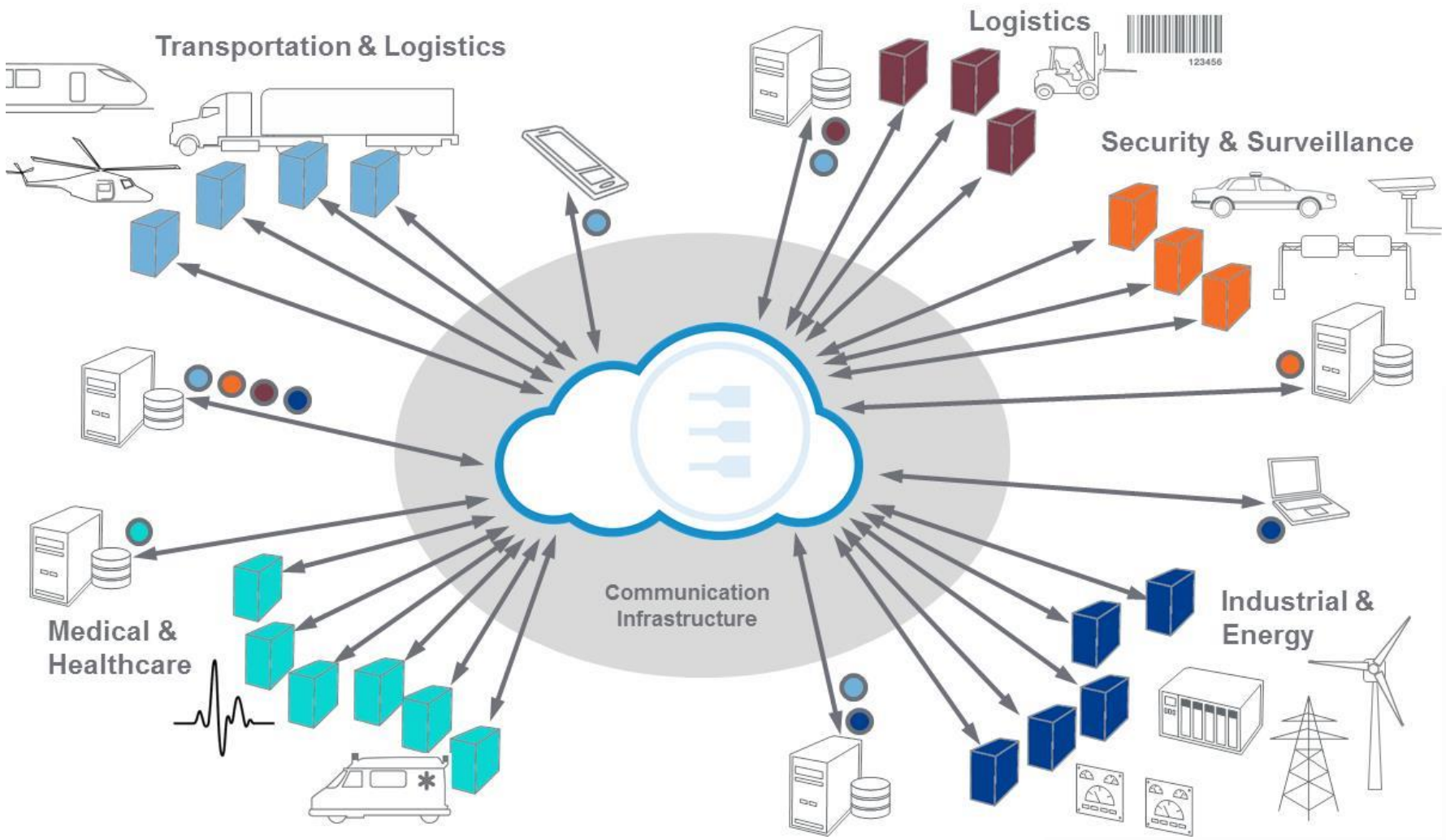
- UPV – UNIVERSITAT POLITÈCNICA DE VALÈNCIA
- Research and Education
  - Three campuses, more than 40.000 students
  - Very active in research, specially ICT
- DRTSL research group
  - Integrated in Communications Department
  - Group Main Researcher:

**Prof. Carlos E. Palau**

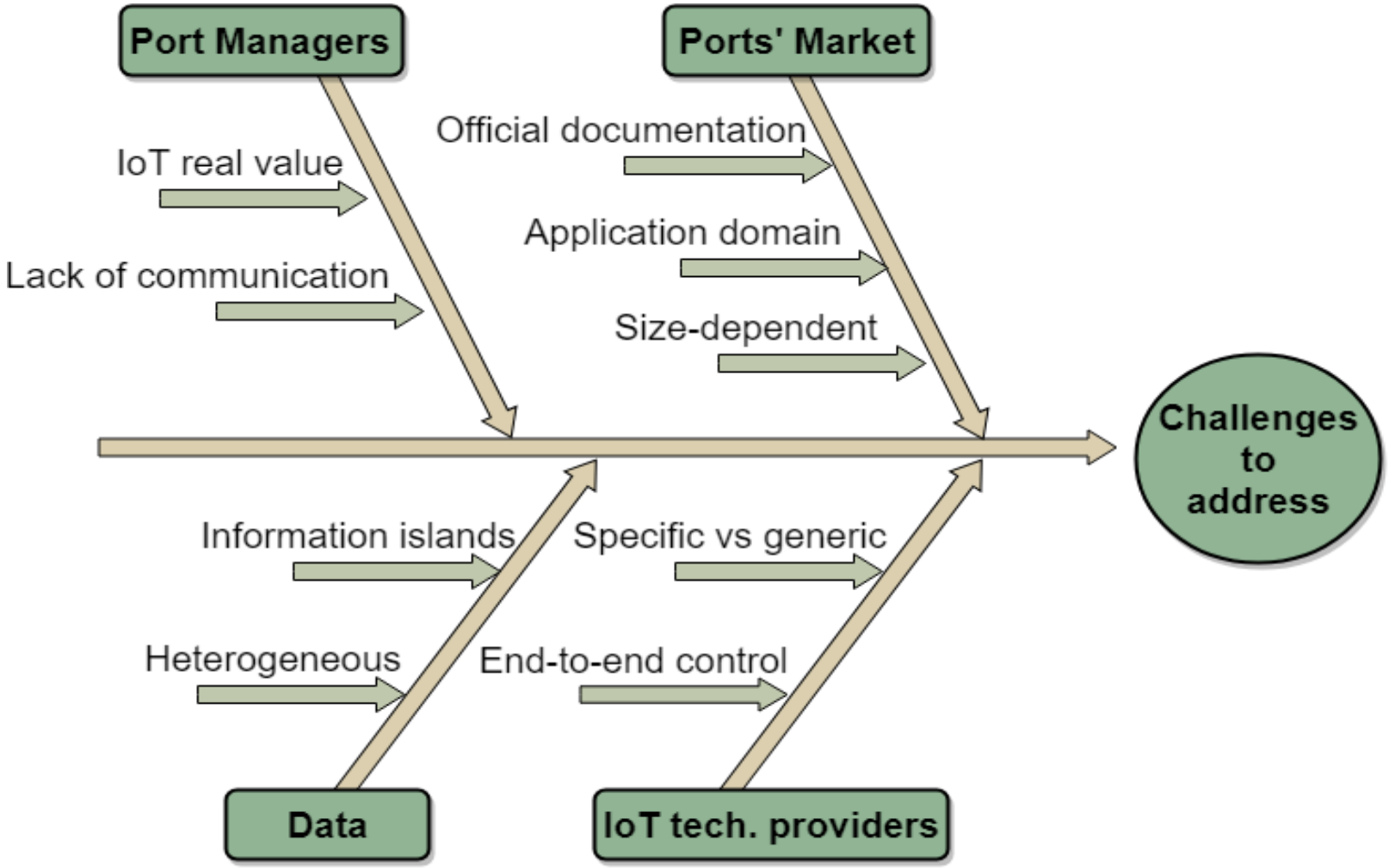
cpalau@dcom.upv.es

- Relevant related expertise:
  - Project Coordination in IoT field
  - Interoperability and 5G
  - SW technology for transport sector (especially ports)
- Current related activity:
  - Coordinating H2020 MG-7.3-2017 PIXEL
  - Coordinating H2020-ICT-30-2015 INTER-IoT
  - Participating in H2020-ICT-2017 5GENESIS
  - Participating in H2020-IOT-2016 ACTIVAGE (leading one WP)
  - Participating in H2020-ICT-2016-1 TRANSFORMING TRANSPORT
  - Tech-transfer with companies, specially port-relat

# IoT connecting Everything Everywhere



# IoT issues in logistics (ports)



# UPV's on-going related projects

- Focused on **IoT** innovation
- Aiming at **INTEROPERABILITY**
- One logistics use-case **INTER-LogP**
- All IoT layers covered
- **Final stage** of execution (M33)

- Focused on **PORTS** innovation
- Aiming at **ENVIRONMENTAL**
- Pilots with ports and stakeholders involved
- Centered **after data gathering**
- **Early stage** of execution (M6)

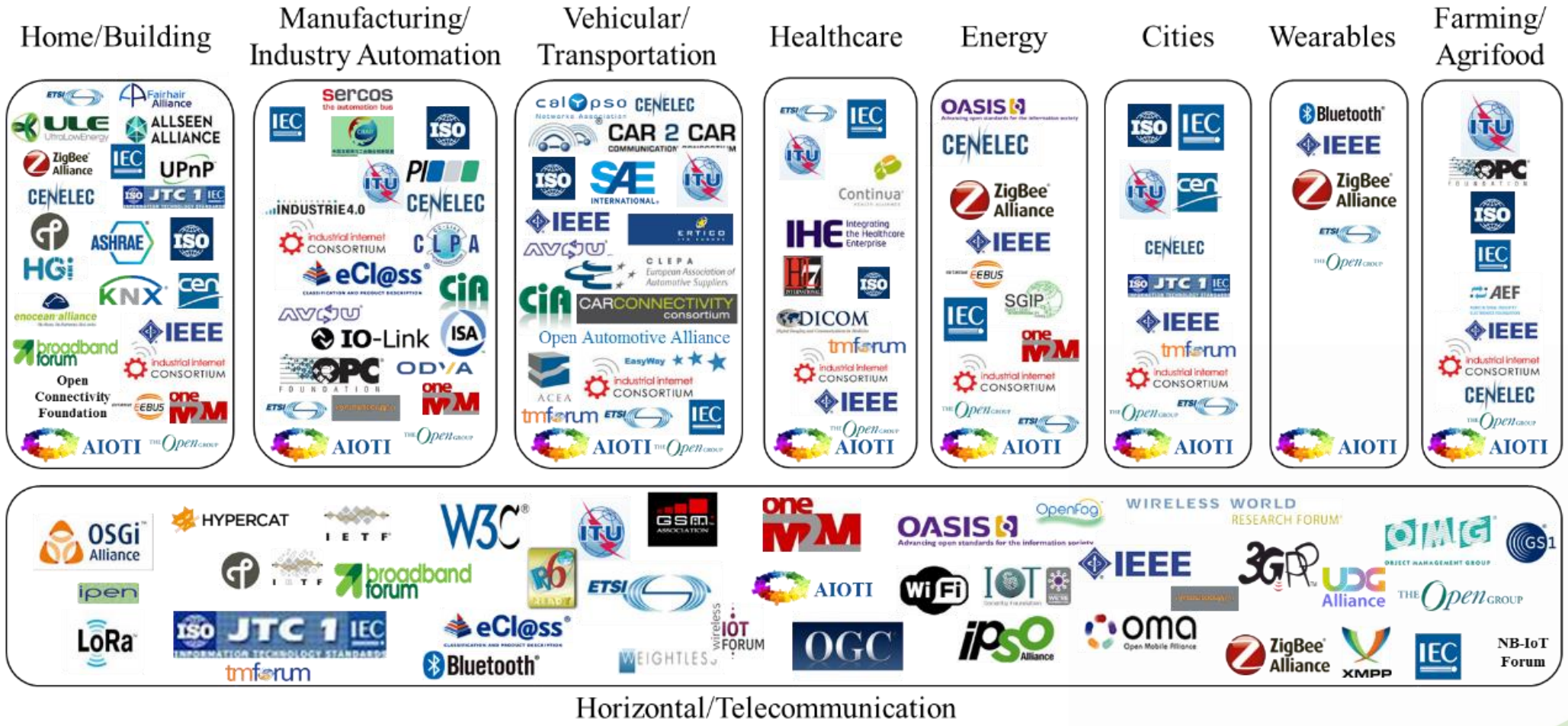
# INTER-IoT in a Nutshell

**INTER-IoT**: *an interoperable open IoT framework (with associated engineering tools and methodology) for seamless integration of heterogeneous IoT platforms functioning in the same or different application domains*

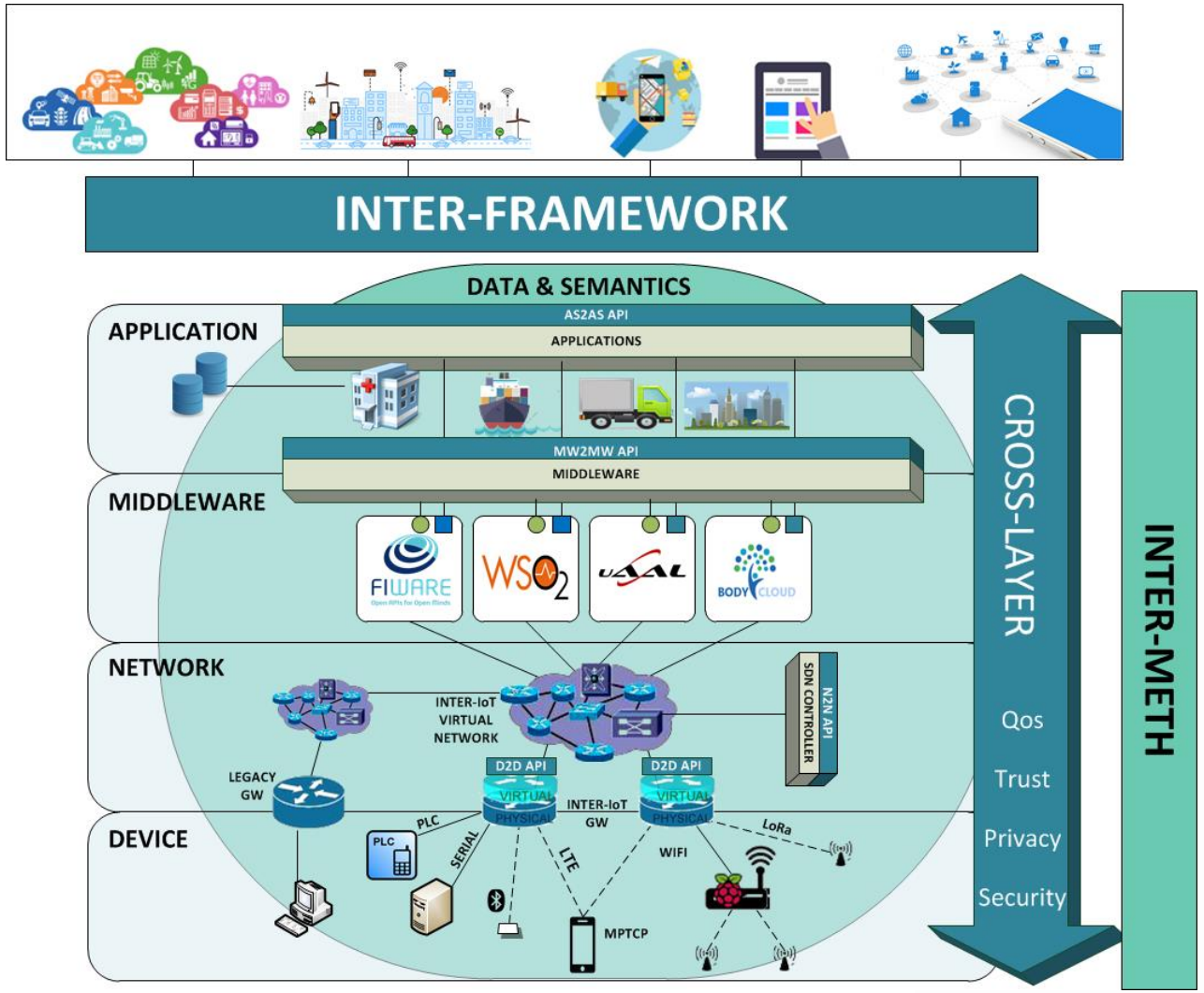

Moreover:

- Interoperability and integration between layers of heterogeneous IoT platforms (existing and new)
- A novel service API
- A reference architecture for integrated IoT platforms

# Real probem – Real solution



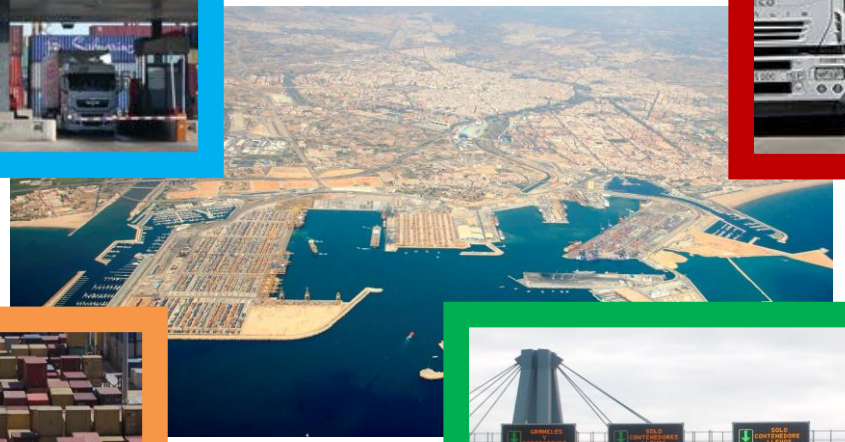
# Technical solution

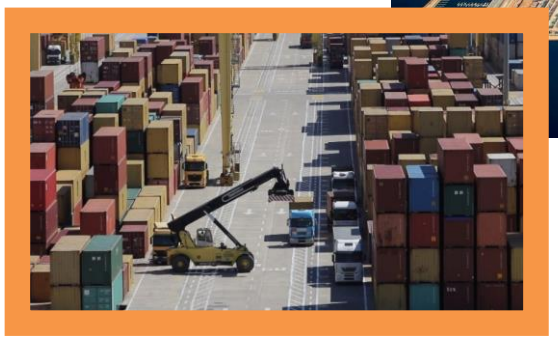


# INTER-LogP

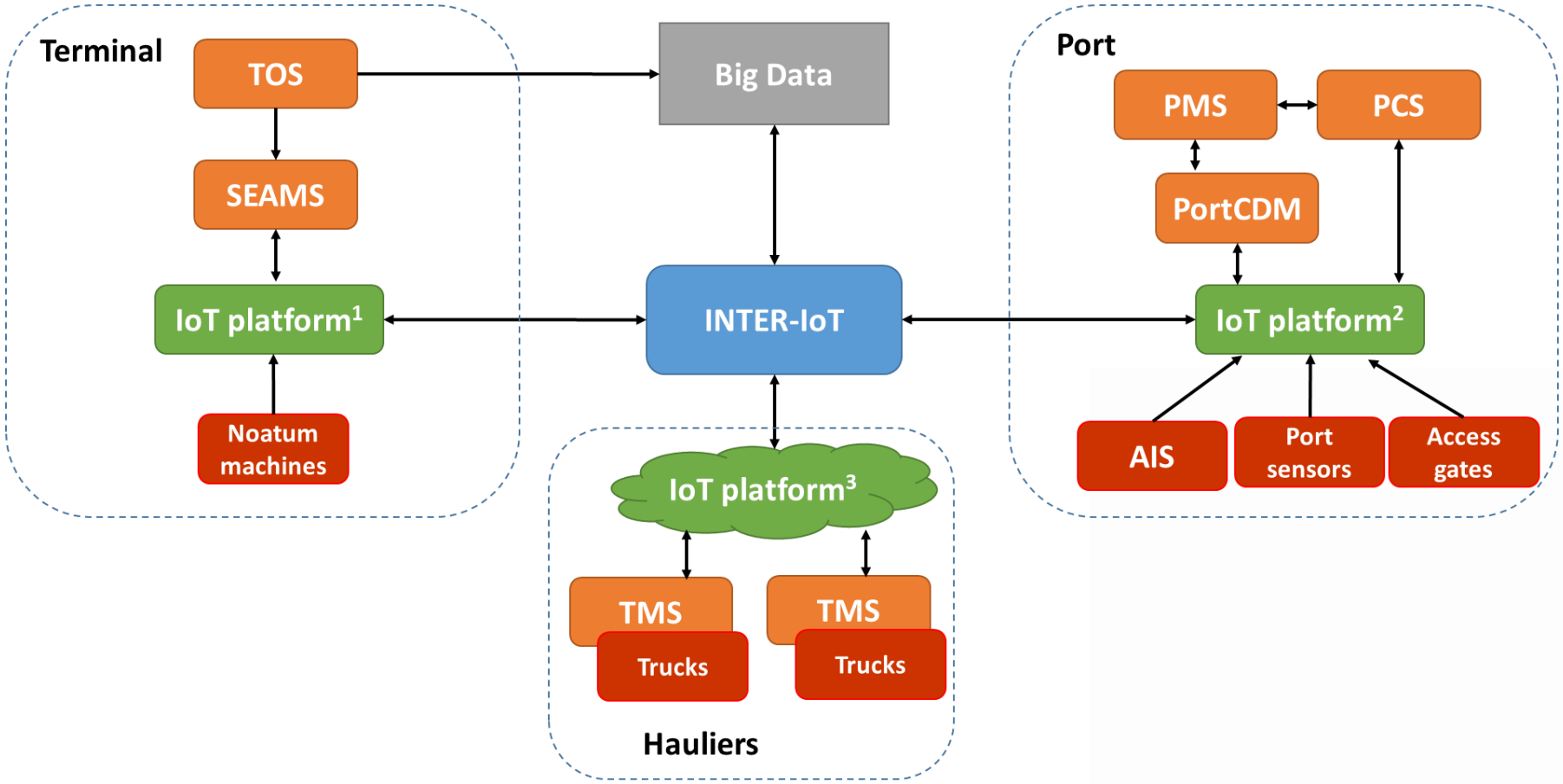
IoT access control, traffic and operational assistance


interiot

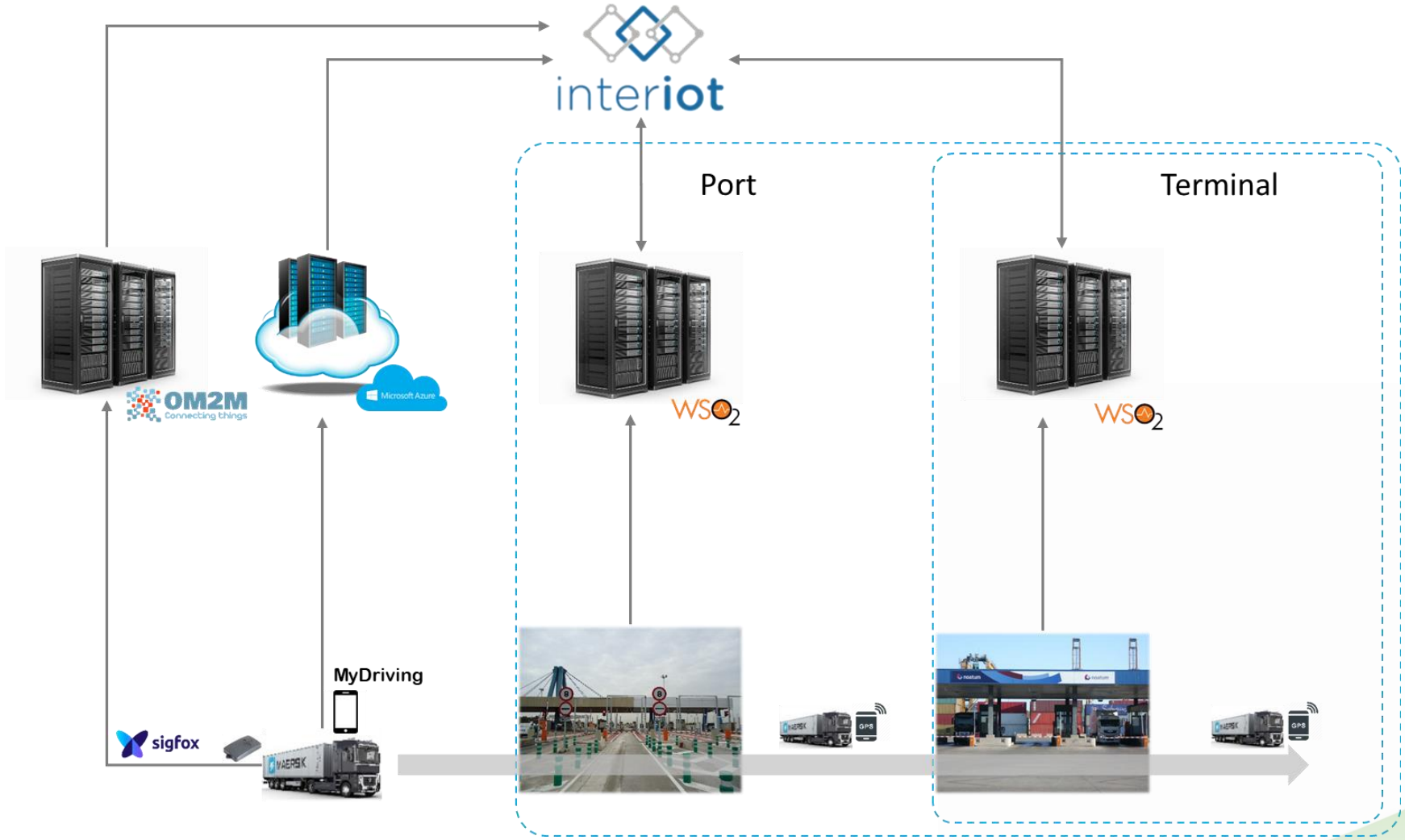




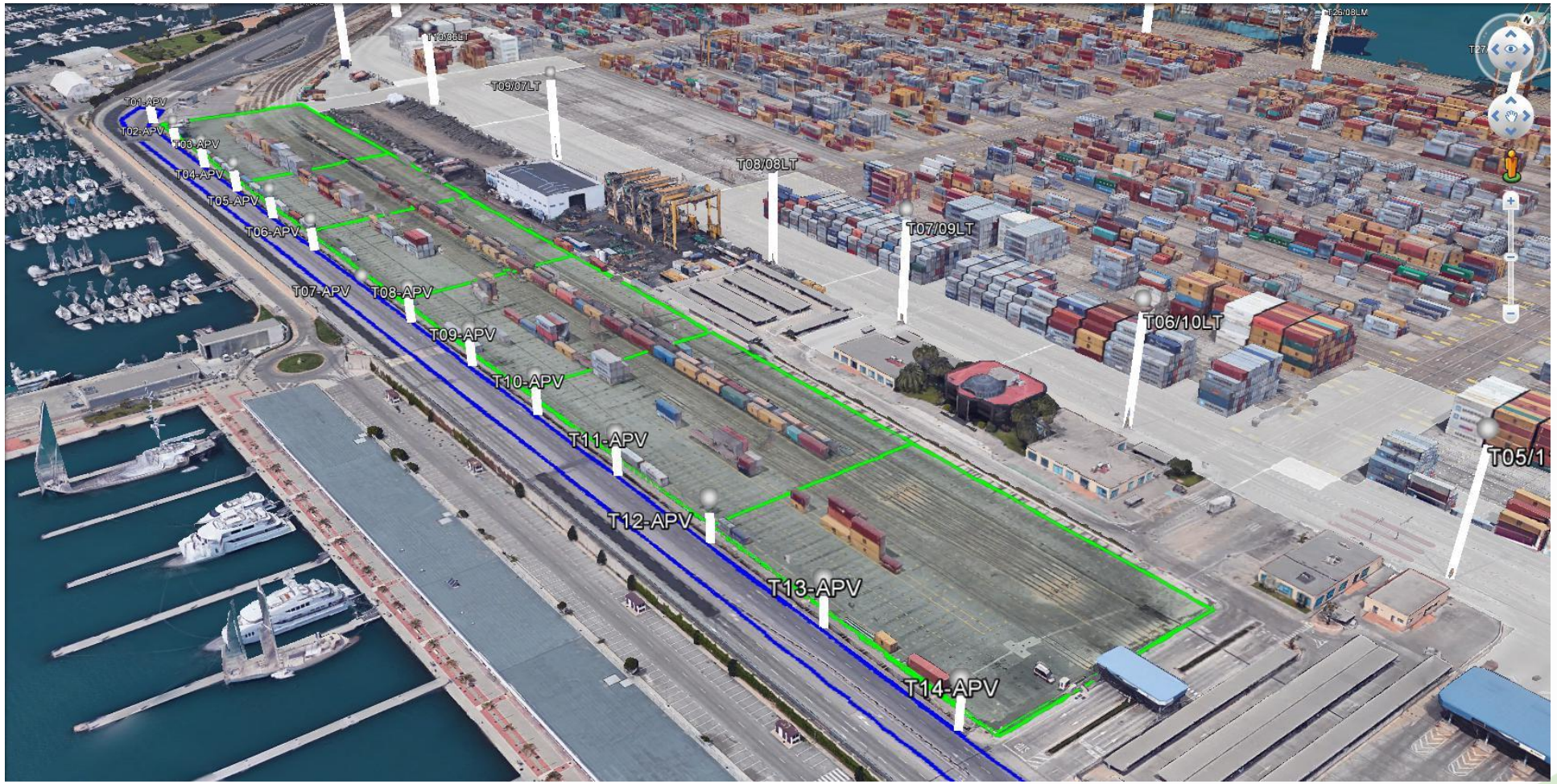
# INTER-LogP overview



# INTER-LogP IoT for access control and trafic assistance



# Dynamic lighting



# PIXEL in a Nutshell

**PIXEL** *is the first flexible IoT solution to reduce environmental impact and optimize operations of small and medium-sized ports*

Moreover:

Enable a quicker, more accurate and in-depth knowledge of port operations

Model and simulate port-operations processes for automated optimization

Develop predictive algorithms

Develop a single metric - the Port Environmental Index (PEI)

# PIXEL Concept

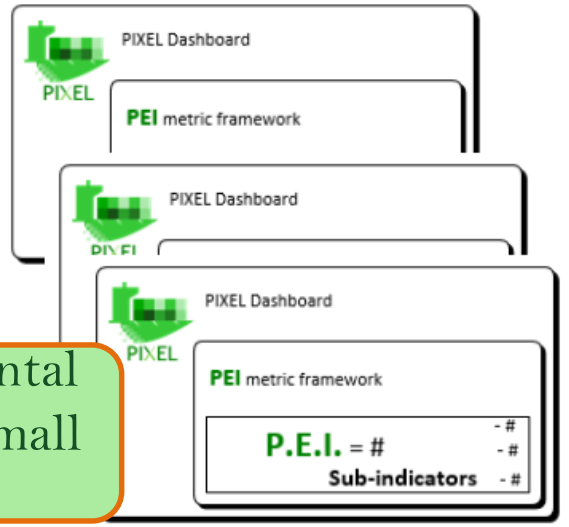
Information sharing with ICT Infrastructure

Predictive algorithms for reducing the environmental impact

Enable Environmental Management for Small Ports

Multimodal transport optimization

Ambitious use-cases



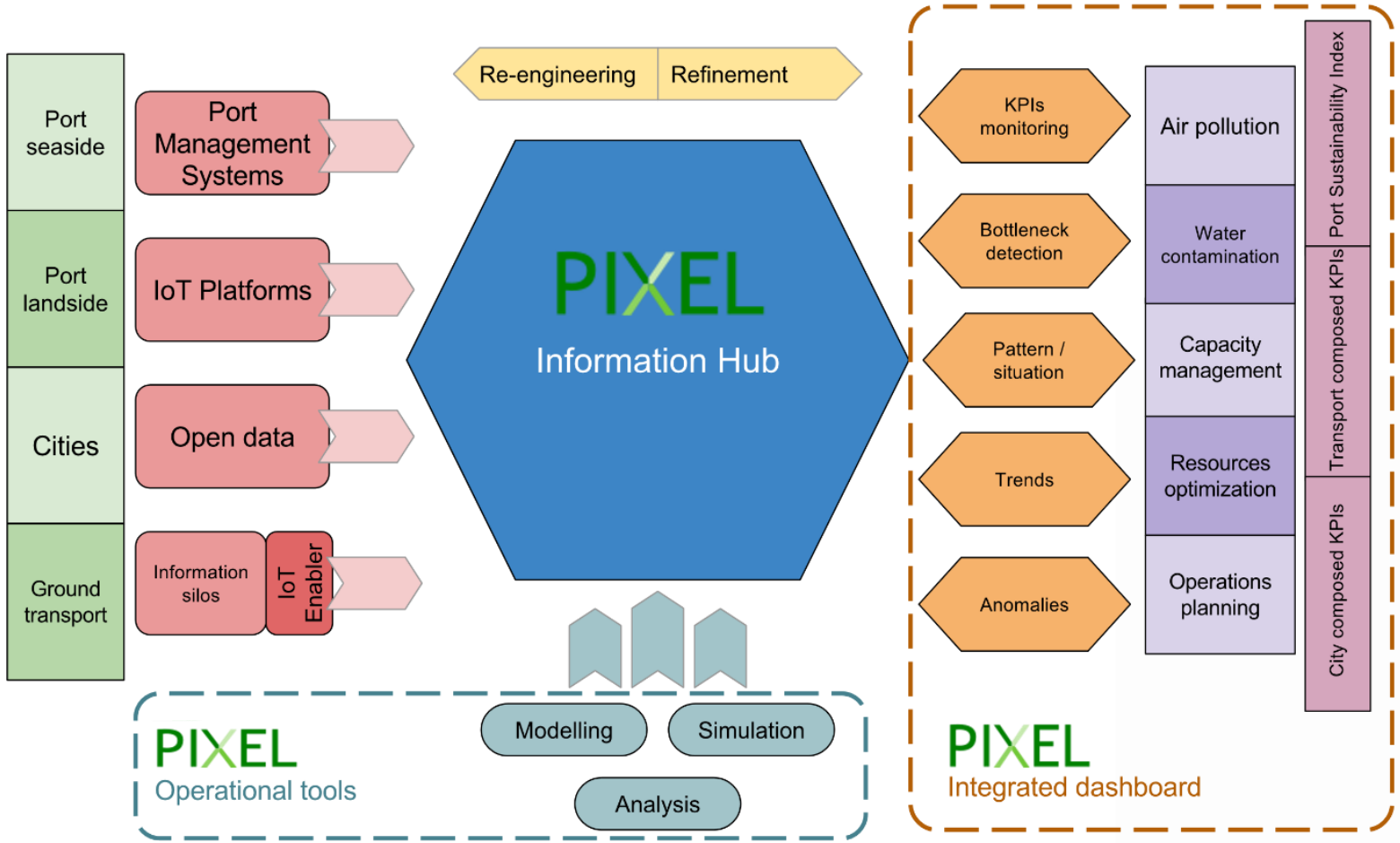

Standardized

Formatted

Generic

On-purpose features

# Technical solution



# Use-cases

PEI use-case (transversal to all ports)

**PORT OF MONFALCONE**

Intermodal transport use-case

**PORT OF BORDEAUX**

Energy management use-case

**PORT OF PIRAEUS &**
**PORT OF THESSALONIKI**

Port-city integration use-case

# Potential IoT contribution to OBOR

**Reduction** of environmental impact of port activities

**Reduction** of operational and infrastructural cos

**Improvement** of logistics efficiency in multimodal hubs

Better Port-City **integration**

**Less dependency** on different technology providers when **attempting digitalisation**

# Thank you and questions

Read more at http://www.inter-iot.eu

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@interiot.H2020

INTER-IoT

and http://www.iot-epi.eu

Read more at http://pixel-ports.eu

@PortsPixel

@PIXELPORTS

pixel-ports

and http://www.docksthefuture.eu

Horizon 2020 – Research and Innovation Framework Programme